



UNITED STATES PATENT AND TRADEMARK OFFICE

57
UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/750,682	01/02/2001	Chishio Hosokawa	HEIW:003	8198

7590 06/29/2004
PARKHURST & WENDEL, L.L.P.
1421 Prince Street, Suite 210
Alexandria, VA 22314-2805

EXAMINER

COLON, GERMAN

ART UNIT	PAPER NUMBER
----------	--------------

2879

DATE MAILED: 06/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

SA

Office Action Summary	Application No.	Applicant(s)	
	09/750,682	HOSOKAWA ET AL.	
	Examiner	Art Unit	
	German Colón	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 and 17-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13, 15, 17-19, 21 and 22 is/are rejected.
- 7) ☐ Claim(s) 14, 20 and 23 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 February 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1/23/01</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The Remarks, filed on August 20, 2003, has been entered and acknowledged by the Examiner.

Drawings

2. The drawings were received on February 21, 2003. These drawings are acceptable.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 15 recites the limitation "the conductive layer" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Art Unit: 2879

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-4, 8, 10, 18-19 and 21-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Towns et al. (US 6,416,885).

Regarding claims 1 and 2, Towns discloses an organic EL element comprising an anode 1 (5), a semiconductor layer 2, an organic light-emitting medium 3, and a cathode 4, wherein the organic light-emitting medium is located between a first electrode 4 and the semiconductor layer comprising a non-monocrystal material and a second electrode 5 is electrically connected to an edge section of the semiconductor layer (see Fig. 1) when the cathode is designated as the first electrode and the anode is designated as the second electrode.

Regarding claim 3, Towns discloses the second electrode 5 being electrically connected to two or more edge sections of the semiconductor layer 2 (see Fig. 1).

Regarding claim 4, Towns discloses the second electrode 5 being patterned.

Referring to claim 8, Towns discloses the non-monocrystal material being a conductive conjugate polymer.

Referring to claim 10, Towns discloses the semiconductor layer having a thickness within the range of 1 to 700 nm (see Col. 2, line 35-37).

Referring to claims 18 and 19, claims 18 and 19 are rejected over the reasons stated in the rejection of claims 1 and 4, respectively.

Referring to claim 21, Towns discloses the light-emitting medium not being found between the second electrode and the semiconductor layer (see Fig. 1).

In regards to claim 22, claim 22 is rejected over the reasons stated in the rejection of claim 1.

7. Claims 1, 5-7, 9, 11, 12 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Riess et al. (WO 97/47050).

Regarding claim 1, Riess discloses an organic EL element comprising (see at least Figs. 10-12 in view of Tables 2-4) an anode, a semiconductor layer, an organic light-emitting medium, and a cathode, wherein the organic light-emitting medium is located between a first electrode and the semiconductor layer comprising a non-monocrystal material and a second electrode is electrically connected to an edge section of the semiconductor layer when either one of the anode or cathode is designated as the first electrode and the other is designated as the second electrode.

Regarding claim 5, Riess discloses the non-monocrystal material being at least one of the chalcogenide materials selected from a group consisting of ZnS, ZnSe, CdS and ZnMgSSe (see Page 25, 2nd paragraph).

Referring to claim 6, Riess discloses the non-monocrystal material being a metal oxide of Zn (see Page 25, 2nd paragraph).

Referring to claim 7, Riess discloses the non-monocrystal material being diamond (see Page 25, 2nd paragraph).

Referring to claim 9, Riess discloses the semiconductor layer having a band gap of at least 2.7 eV (see at least Page 25, 1st paragraph).

In regards to claims 11-12, Reiss discloses the semiconductor layer having a specific resistance within the range of 1×10^{-3} to $1 \times 10^4 \Omega \cdot \text{cm}$ and having an electric charge concentration within the range of 1×10^{12} to $1 \times 10^{20} \text{ cm}^{-3}$ (see at least Page 24, 1st paragraph).

In regards to claim 17, Reiss discloses an auxiliary electrode being provided for the second electrode (see at least Figs. 10-12 in view of Tables 2-4).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Towns et al. (US 6,416,885).

Towns discloses the claimed invention except for the limitation of “the semiconductor layer having a light transmittance of at least 10%”.

However, Towns teaches the light emitted by the organic light-emitting medium being extracted through the semiconductor layer side. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the light transmittance of the semiconductor layer being at least 10%, in order to properly extract the light emitted by organic light-emitting medium without reducing the brightness of the device.

Allowable Subject Matter

10. Claims 14, 20 and 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter:

The references of the Prior Art of Record fail to teach or suggest the combination of the limitations as set forth in claim 14, 20 and 23, and specifically comprising the limitations of “an electric insulation section being provided between the second electrode and the organic light-emitting medium” and “the second electrode being located outside an are common to both the first electrode and the organic light-emitting medium”.

Response to Arguments

12. Applicant's arguments (filed 08/20/03) with respect to the claim have been considered but are moot in view of the new ground(s) of rejection.

13. While the above stated rejection has not been previously presented to the Applicant, the Examiner will address some remarks stated in Communication filed 2/21/03 which may be pertinent to this Office Action, in order to expedite the prosecution of the application.

Applicant argues (see Communication filed 2/21/03, Page 11) that reference WO '050 fails to disclose the second electrode connecting to an edge section of the semiconductor layer,

Art Unit: 2879

and that such embodiment requires light to be taken out through one of the electrodes, which means that the electrode must be transparent and made of a mono-crystal material.

The Examiner notes that the second electrode, on at least Figs. 10-12, is in contact with an edge of the semiconductor layer, wherein said edge is formed by a plane parallel to the surface of said semiconductor layer in contact with the second electrode, and a plane in a thickness direction. The Examiner concedes that the electrode must be transparent in order to extract the light emitted by the organic medium, yet, even if said electrode was made of a mono-crystal material, the reference does not teach away from the claimed invention because the claims only recite that the semiconductor layer is made of a non-monocrystal layer, but do not require the electrodes to satisfy said limitation.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to German Colón whose telephone number is 571-272-2451. The examiner can normally be reached on Monday thru Thursday, from 8:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on 571-272-2457. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2879

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


gc

K. Guharay